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Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary.)		Complete if Known	
		Application Number	10/028,643
		Filing Date	December 20, 2001
		First Named Inventor	Ahn, Kie
		Group Art Unit	2814
		Examiner Name	Pham, Long
Sheet 1 of 4		Attorney Docket No: 1303.030US1	

US PATENT DOCUMENTS						
Examiner Initial *	USP Document Number	Publication Date	Name of Patentee or Applicant of cited Document	Class	Subclass	Filing Date If Appropriate
LP	US-2001/0002280	05/31/2001	Sneh, Ofer	427	255.28	12/22/2000
	US-2001/0009695 A1	07/26/2001	Saanila, Ville A., et al.	427	255.39	01/18/2001
	US-2001/0051442 A1	12/13/2001	Katsir, Dina , et al.	438	758	06/28/2001
	US-2001/0053082 A1	12/20/2001	Chipalkatti, Makarand H., et al.	362	496	12/22/1999
	US-2002/0001971	01/03/2002	Cho, Hag-ju	438	765	06/27/2001
	US-2002/0022156 A1	02/21/2002	Bright, Clark I.	428	698	08/24/2001
	US-2002/0119297	08/29/2002	Forrest, Stephen R., et al.	428	199	12/21/2001
	US-2002/0146916 A1	10/10/2002	Irino, Kiyoshi , et al.	438	785	03/29/2002
	US-2003/0001241 A1	01/02/2003	Chakrabarti, Utpal K., et al.	257	643	05/28/2002
	US-2003/0175411 A1	09/18/2003	Kodas, Toivo T., et al.	427	58	10/04/2002
	US-4,394,673	07/19/1983	Thompson, Richard D., et al.	357	15	09/29/1980
	US-5,055,319	10/08/1991	Bunshah, Rointan F., et al.	427	38	04/02/1990
	US-5,621,681	04/15/1997	Moon, Jong	365	145	03/22/1996
	US-5,744,374	04/28/1998	Moon, Jong	437	60	11/18/1996
	US-5,972,847	10/26/1999	Feenstra, Roeland , et al.	505	473	01/28/1998
	US-6,093,944	07/25/2003	VanDover, Robert B.	257	310	06/04/1998
	US-6,207,589	03/27/2001	Ma, Yanjun , et al.	438	785	02/29/2000
	US-6,232,847	05/15/2001	Marcy, 5th, Henry O., et al.	331	167	05/28/1998
✓	US-6,291,866	09/18/2001	Wallace, Robert M., et al.	257	410	10/20/1999

EXAMINER

LP/Long Pham

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4/14/04

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LP	US-6,297,516	10/02/2001	Forrest, Stephen R., et al.	257	40	06/25/1999
	US-6,451,695	09/17/2002	Sneh, Ofer	438	685	12/22/2000
	US-6,602,338	08/05/2003	Chen, San-Yuan, et al.	106	287.19	04/11/2001

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Foreign Document No	Publication Date	Name of Patentee or Applicant of cited Document	Class	Subclass	T ²

OTHER DOCUMENTS -- NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
LP		AARIK, JAAN, et al., "Influence of substrate temperature on atomic layer growth and properties of HfO/sub 2/ thin films", <u>Thin Solid Films</u> , 340(1-2), (1999), 110-116	
		ALLEN, PETRA, "Atomic Layer deposition of Ta(Al)N(C) thin films using trimethylaluminum as a reducing agent", <u>Journal of the Electrochemical Society</u> , 148(10), (October 2001), G566-G571	
		BENDORAITIS, J G., et al., "Optical energy gaps in the monoclinic oxides of hafnium and zirconium and their solid solutions", <u>Journal of Physical Chemistry</u> , 69(10), (1965), 3666-3667	
		CHAMBERS, J J., et al., "Physical and electrical characterization of ultrathin yttrium silicate insulators on silicon", <u>Journal of Applied Physics</u> , 90(2), (July 15, 2001), 918-33	
		DUSCO, C, et al., "Deposition of tin oxide into porous silicon by atomic layer epitaxy", <u>Journal of the Electrochemical Society</u> , 143, (1996), 683-687	
		EL-KAREH, B, et al., "The evolution of DRAM cell technology", <u>Solid State Technology</u> , 40(5), (1997), 89-90, 92, 95-6, 98, 100-1	
		FORSGREN, K, <u>Comprehensive Summaries of Uppsala Dissertation from the Faculty of Science and Technology</u> , 665, (2001), 37	
		GUILLAUMOT, B, et al., "75 nm damascene metal gate and high-k integration for advanced CMOS devices", <u>Technical Digest of International Electron Devices Meeting 2002</u> , (2002), 355-358	
		GUTOWSKI, M J., "Thermodynamic stability of high-K dielectric metal oxides ZrO/sub 2/ and HfO/sub 2/ in contact with Si and SiO/sub 2/", <u>Applied Physics Letters</u> , 80(11), (March 18, 2002), 1897-1899	
		JUNG, H S., et al., "Improved current performance of CMOSFETs with nitrogen incorporated HfO/sub 2/-Al/sub 2/O/sub 3/ laminate gate dielectric", <u>Technical Digest of International Electron Devices Meeting 2002</u> , (2002), 853-856	
		KANG, L, et al., "MOSFET devices with polysilicon on single-layer HfO/sub 2/ high-K dielectrics", <u>International Electron Devices Meeting 2000. Technical Digest. IEDM</u> , (2000), 35-8	
		KIM, Y. W., et al., "50nm gate length logic technology with 9-layer Cu	

EXAMINER

Long Pham

DATE CONSIDERED

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Under the Paperwork Reduction Act of 1996, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

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First Named Inventor Ahn, Kie

Group Art Unit 2814

Examiner Name Pham, Long

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OTHER DOCUMENTS -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
LP		interconnects for 90nm node SoC applications", <u>Technical Digest of International Electron Devices Meeting 2002</u> , (2002),69-72	
		KUKLI, K, et al., "Comparison of hafnium oxide films grown by atomic layer deposition from iodide and chloride precursors", <u>Thin Solid Films</u> , 416, (2002),72-79	
		KUKLI, KAUPPO, et al., "Influence of thickness and growth temperature on the properties of zirconium oxide films growth by atomic layer deposition on silicon", <u>Thin Solid Films</u> , 410(1-2), (2002),53-60	
		KUKLI, KAUPPO, et al., "Low-Temperature Deposition of Zirconium Oxide-Based Nanocrystalline Films by Alternate Supply of Zr[OC(CH ₃) ₃] ₄ and H ₂ O", <u>Chemical Vapor Deposition</u> , 6(6), (2000),297-302	
		KUKLI, K J., et al., "Properties of hafnium oxide films grown by atomic layer deposition from hafnium tetraiodide and oxygen", <u>Journal of Applied Physics</u> , 92(10), (November 15, 2002),5698-5703	
		LEE, BYOUNG H., et al., "Characteristics of TaN gate MOSFET with ultrathin hafnium oxide (8 A-12 A)", <u>Electron Devices Meeting, 2000. IEDM Technical Digest. International</u> , (2000),39-42	
		LEE, S J., et al., "High quality ultra thin CVD HfO ₂ gate stack with poly-Si gate electrode", <u>Electron Devices Meeting, 2000. IEDM Technical Digest. International</u> , (2000),31-34	
		LEE, JUNG-HYOUNG, et al., "Mass production worthy HfO ₂ /sub 2/-Al/sub 2/O/sub 3/ laminate capacitor technology using Hf liquid precursor for sub-100 nm DRAMs", <u>Electron Devices Meeting, 2002. IEDM '02. Digest. International</u> , (2002),221-224	
		NAKAJIMA, ANRI, "Soft breakdown free atomic-layer-deposited silicon-nitride/SiO ₂ /sub 2/ stack gate dielectrics", <u>International Electron Devices Meeting. Technical Digest</u> , (2001),6.5.1-4	
		NIILISK, A, "Atomic-scale optical monitoring of the initial growth of TiO ₂ thin films", <u>Proceedings of the SPIE - The International Society for Optical Engineering</u> , 4318, (2001),72-77	
		OH, C B., et al., "Manufacturable embedded CMOS 6T-SRAM technology with high-k gate dielectric device for system-on-chip applications", <u>Technical Digest of International Electron Devices Meeting 2002</u> , (2002),423-426	
		PARK, JAEHOO, et al., "Chemical vapor deposition of HfO ₂ /sub 2/ thin films using a novel carbon-free precursor: characterization of the interface with the silicon substrate", <u>Journal of the Electrochemical Society</u> , 149(1), (2002),G89-G94	
		POVESHCHENKO, V P., et al., "Investigation of the phase composition of films of zirconium, hafnium and yttrium oxides", <u>Soviet Journal of Optical Technology</u> , 51(5), (1984),277-279	
		RAHTU, ANTTI, et al., "Atomic Layer Deposition of Zirconium Titanium Oxide	

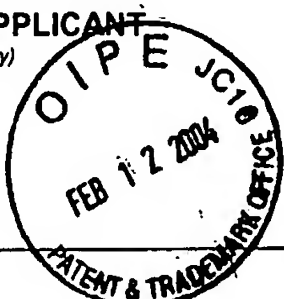
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		from Titanium Isopropoxide and Zirconium Chloride", <u>Chemistry of Materials</u> , 13(5), (May 2001), 1528-1532	
		ROBERTSON, J. , "Band offsets of wide-band-gap oxides and implications for future electronic devices", <u>Journal of Vacuum Science & Technology B (Microelectronics and Nanometer Structures)</u> , 18(3), (May-June 2000), 1785-1791	
		ROSSNAGEL, S M., et al., "Plasma-enhanced atomic layer deposition of Ta and Ti for interconnect diffusion barriers", <u>Journal of Vacuum Science & Technology B (Microelectronics and Nanometer Structures)</u> , 18(4), (July 2000), 2016-2020	
		TAVEL, B , et al., "High performance 40 nm nMOSFETs with HfO/sub 2/ gate dielectric and polysilicon damascene gate", <u>Technical Digest of International Electron Devices Meetings 2002</u> , (2002), 429-432	
		VAN DOVER, R B., et al., "Deposition of Uniform Zr-Sn-Ti-O Films by On-Axis Reactive Sputtering", <u>IEEE Electron Device Letters</u> , 19(9), (September 1998), 329 - 331	
		WOLF, S. , et al., In: <u>Silicon Processing of the VLSI Era, Vol. 1</u> , Lattice Press, 374-380	
✓		WOLFRAM, G , et al., "Existence range, structural and dielectric properties of ZrxTiySnzO4 ceramics (x + y =2)", <u>Materials Research Bulletin</u> , 16(11), (November 1981), 1455-63	

EXAMINER

Long Pham

DATE CONSIDERED

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